

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listing of claims in the application:

**Listing of Claims:**

Claims 1-24 (canceled)

25. (currently amended) A device for measuring transient magnetic performance of a magnetic component, the device comprising a flux path closure device coupled to the magnetic component to define a closed flux path through the flux path closure device and the magnetic component, an excitation coil responsive to a transient excitation signal to generate a transient magnetic flux in the closed flux path, and a monitoring device configured to monitor a transient voltage across, and a transient current through, the excitation coil resulting from application of the transient excitation signal thereto, the monitoring device configured to compute an effective resistance of the excitation coil as a function of the transient voltage and the transient current, and to compute the transient magnetic flux as a function of the transient voltage, the transient current and the effective resistance.

26. (currently amended) The device of claim 25 wherein the monitoring device is configured to compute an integrated voltage as an integral of a number of transient voltage values measured across the excitation coil over a duration of the transient

excitation signal and to compute an integrated current as an integral of a number of transient current values measured through the excitation coil over the duration of the transient excitation signal,

and wherein the monitoring device is configured to compute the effective resistance of the excitation coil as a ratio of the integrated voltage and the integrated current.

27. (currently amended) The device of claim 25 wherein the monitoring device is configured to compute the transient magnetic flux as a function of the transient voltage, the transient current and a number of turns in the excitation coil.

28. (currently amended) The device of claim 27 wherein the monitoring device is configured to compute the transient magnetic flux as a ratio of an integral of a function over time and the number of turns of the excitation coil, the function being a difference between the transient voltage and a product of the transient current and the effective resistance of the excitation coil.

29. (Previously presented) The device of claim 25 wherein the magnetic component defines a cavity therein sized to receive the excitation coil therein.

30. (Previously presented) The device of claim 25 wherein the flux path closure device defines a cavity therein sized to receive the excitation coil therein.

31. (Previously presented) The device of claim 25 wherein the flux path closure device is fabricated from a material that suppresses eddy current therein.

32. (Previously presented) The device of claim 31 wherein the flux path closure device is fabricated from oxide-coated, pressed metal particles.

33. (Previously presented) The device of claim 32 wherein the metal particles are iron particles.

34. (Previously presented) The device of claim 31 wherein the flux path closure device is fabricated from laminated layers of iron.

35. (Previously presented) The device of claim 25 further including a spacer positioned between the flux path closure device and the magnetic component with the closed flux path extending therethrough.

36. (Previously presented) The device of claim 35 wherein the spacer is formed of a non-magnetic material.

37. (Previously presented) The device of claim 35 wherein the spacer is formed of an electrically non-conductive material.

38. (Previously presented) The device of claim 25 further including a signal source configured to produce the transient excitation signal.

39. (Previously presented) The device of claim 38 wherein the signal source is a current source, and wherein the transient excitation signal is a transient current signal.

40. (Previously presented) The device of claim 38 wherein the signal source is a voltage source, and wherein the transient excitation signal is a transient voltage signal.

41. (currently amended) The device of claim 25 wherein the monitoring device includes means for monitoring the transient voltage across the excitation coil.

42. (currently amended) The device of claim 25 wherein the monitoring device includes means for monitoring the transient current through the excitation coil.

43. (Previously presented) The device of claim 25 further including a graphing system configured to plot the transient magnetic flux as flux linkage vs. time.

44. (Previously presented) The device of claim 25 further including a graphing system configured to plot the transient magnetic flux as flux linkage vs. current.

45. (Previously presented) The device of claim 25 further including a flux coil separate from the excitation coil,

wherein the monitoring device is configured to monitor a voltage across the flux coil and compute the transient magnetic flux as a function of the voltage across the flux coil and a number of turns in the flux coil.